

Serial No. 09/783,035  
Docket No. F01-243-USdiv

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### REMARKS

Claims 18-19 and 22-26 are all of the claims presently being examined in the application.

It is noted that any claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Entry of this Amendment is believed proper since no new issues are being presented to the Examiner which would require further consideration and/or search.

Claims 22-26 stand rejected under 35 U.S.C. §102(b) as anticipated by Nakamura et al. (U.S. Patent No. 5,578,839) (hereinafter "Nakamura").

This rejection is respectfully traversed in view of the following discussion.

#### **I. THE CLAIMED INVENTION**

The claimed invention (e.g., as exemplarily defined in claim 22) is directed to a method for producing a light-emitting semiconductor device of a group III nitride compound that includes forming an N-layer of an N-type conduction, the N-layer including gallium nitride, forming an emission layer of a group III nitride compound semiconductor satisfying the formula,  $Al_{x1}Ga_{y1}In_{1-x1-y1}N$ , where  $0 \leq x1 \leq 1$ ,  $0 \leq y1 \leq 1$ , and  $0 \leq x1 + y1 \leq 1$ , on the N-layer, forming a P-layer of a P-type conduction, on the emission layer, the P-layer including aluminum gallium nitride satisfying the formula,  $Al_{x2}Ga_{1-x2}N$ , where  $0 < x2 < 1$ , and forming a contact layer of P-type conduction, on the P-layer, the contact layer comprising gallium nitride (see Application at page 18, lines 7-9).

Using the p-GaN layer as a contact layer and forming it on the p-AlGaN layer provides an electrode having a smaller contact resistance (see Application at page 21, lines 3-14).

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## II. THE PRIOR ART REJECTION

The Examiner alleges that Nakamura teaches the claimed invention of claims 22-26. Applicants, however, respectfully submit that there are elements of the claimed invention which are neither taught nor suggested by Nakamura.

That is, Nakamura does not teach or suggest *"forming a contact layer of a P-type conduction, on said P-layer, said contact layer comprising gallium nitride"* as recited in claim 22.

As noted above, unlike conventional methods for producing light-emitting semiconductor devices, the claimed invention of exemplary claim 1 provides a method for producing a light-emitting semiconductor device of a Group III nitride compound that includes forming a contact layer of P-type conduction, on the P-layer, where the contact layer includes gallium nitride (see Application at page 18, lines 7-9). As mentioned above, using the p-GaN layer as a contact layer and forming it on the p-AlGa<sub>N</sub> layer provides an electrode having a smaller contact resistance (see Application at page 21, lines 3-14).

The Examiner attempts to rely on claim 19 and column 11, lines 44-47 of Nakamura to support his allegations. The Examiner, however, is clearly incorrect.

That is, nowhere in these passages (nor anywhere else for that matter) does Nakamura teach or suggest a method of producing a light-emitting semiconductor device including forming a contact layer of a P-type conduction, on the P-layer, wherein the contact layer includes gallium nitride. Indeed, the passage relied upon by the Examiner merely recites a p-type GaN contact layer formed on the clad layer (20) (see Nakamura at column 11, lines 44-47).

Furthermore, Nakamura does not teach or suggest *"said P-layer comprising aluminum gallium nitride satisfying the formula, Al<sub>x</sub>2Ga<sub>1-x</sub>2N, where 0<x2<1"* as recited in claim 22.

Indeed, the Examiner relies upon column 5, lines 25-32 of Nakamura as allegedly teaching this feature. The Examiner, however, is clearly incorrect.

This passage in Nakamura merely teaches a clad layer represented by the formula, Ga<sub>z</sub>Al<sub>1-z</sub>N (0≤z≤1). This formula does not satisfy the formula recited in claim 22. The Examiner provides one example, where z=0.5, to allege that these formulas are equivalent. However,

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Applicants submit that this reasoning is erroneous. For any other value of  $z$ , the formula of Nakamura does not satisfy the formula recited in claim 22. Therefore, Applicants respectfully submit that Nakamura does not teach or suggest a method of producing a light-emitting semiconductor device including forming a contact layer of a P-type conduction, on the P-layer, wherein the contact layer includes gallium nitride (where the P-layer includes aluminum gallium nitride satisfying the formula,  $Al_{x2}Ga_{1-x2}N$ , where  $0 < x2 < 1$ ) as recited by the claimed invention.

Therefore, Applicants respectfully submit that there are elements of the claimed invention that are not taught or suggested by Nakamura. Therefore, the Examiner is respectfully requested to withdraw this rejection.

### III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicants submit that claims 18-19 and 22-26, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

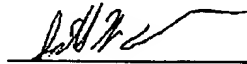
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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: December 1, 2004

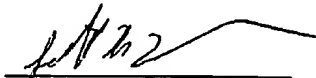


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I hereby certify that I am filing this Response Under 37 CFR §1.116 by facsimile with the United States Patent and Trademark Office to Examiner Thanh T. Nguyen, Group Art Unit 2813 at fax number (703) 872-9306 this 1<sup>st</sup> day of December, 2004.



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